SECURITY INFORMATION

Office Memorandum • UNITED STATES GOVERNMENT

TO :The Files - Gasoline Generator Equipment DATE: 19 February 1953

FROM [redacted] STAT

SUBJECT: Load tests on the engineering model of the [redacted] designed STAT
[redacted]-built Engine Generator STAT

REF :Memo to the files "Gasoline Generator Equipment" from [redacted] STAT
dated 21 January 1953.

1. Reference described a preliminary demonstration of the subject Engine Generator in the Research and Development offices on 10 January 1953.

2. On 10-11 February 1953, the same engineering model was again given test runs, this time under load conditions with full instrumentation. Attending were:

[redacted] 25X1

ocument is part of an integrated
f separated from the file it must be
ted to individual systematic review.

3. This load test with instruments brought to light a rather large error in the output power as reported in the reference. The power output previously reported as 240 watts was actually the sum of the lamp wattages stamped on the bulbs. The instrumentation showed a severe voltage drop at this loading, so that in reality the actual output was approximately 150 watts. This relationship is aptly demonstrated by the curve of terminal voltage and power output as a function of the number of lamps in parallel which shows that when 4 ea. 60 watt bulbs are connected in parallel the terminal voltage drops from 119 volts to 91 volts at a power output of 150 watts.

4. The second graph is a family of curves showing the terminal voltage as a function of power output for various parameters of mixture, throttle linkage, and spark gap settings. The peak power output is noted to be about 175 watts at optimum adjustment but at a regulation of $\frac{124-90}{124}(100) = 27.4\%$

At a maximum tolerable regulation of 10% the power rating of the alternator would be of the order of 100 to 125 watts.

5. This second graph is characteristic of induction alternators. It is generally recognised that this design is less desirable for miniaturized portable equipment than the permanent magnet rotating field type which is in common use. The induction alternator, with its voltage winding, rectifier, filter, field winding, and main current winding is inherently more complex and heavy than is the P.M. type and offers little, in even the best designs, in regulation improvement. This comparison is based upon the fundamental design factors of the two alternator types and is not necessarily influenced by the particular equipment inspected.

SECRET

6. In view of the above tests and inspection it is extremely doubtfull that a small lightweight alternator meeting our requirements of size, weight, and regulation can be made by following the general design features of the [redacted] system. STAT

STAT

OC-E
chrono
dev/sd
monthly report